

IN THE CLAIMS:

Please cancel claims 1 to 10.

Please add the following new claims:

11. (New) A method for producing a zirconium alloy semi-finished product containing by weight at least 97% zirconium, intended for the production of at least one elongated product, comprising:

casting the zirconium alloy to produce an ingot with a diameter between 400 mm and 700 mm and a length between 2 m and 3 m; and

two-stage forging the ingot to produce the semi-finished product intended to be formed to obtain the elongated product, wherein a first forging stage of the ingot is performed at a temperature at which the zirconium alloy is in a state comprising the crystalline α and β phases of the zirconium alloy.

12. (New) The method according to claim 11, wherein at the temperature of the first forging stage, the ingot contains a volume proportion of zirconium alloy in the α phase between 10% and 90%, a remainder of the zirconium alloy of the ingot being in the β phase.

13. (New) The method according to claim 11, wherein the first forging stage is performed at a temperature between 850°C and 950°C.

14. (New) The method according to claim 13, wherein the first forging stage is performed at a temperature of approximately 900°C.

15. (New) The method according to claim 11, wherein the first forging stage is performed at a temperature between 600°C and 950°C.

16. (New) The method according to claim 11, further comprising:

performing a second forging stage at a temperature at which the zirconium alloy of an intermediate product obtained by the first forging stage of the ingot is in the α phase.

17. (New) The method as claimed in claim 11, wherein a second forging stage is performed at a temperature at which the zirconium alloy of an intermediate product

obtained at an end of the first forging stage of the ingot is in a state comprising crystalline α and β phases of the zirconium alloy.

18. (New) The method according to claim 11, wherein the zirconium alloy contains at least 3% by weight in total of additive elements comprising at least one of tin, iron, chromium, nickel, oxygen, niobium, vanadium and silicon, a remainder of the alloy being constituted by zirconium with an exception of the inevitable impurities.

19. (New) The method according to claim 11 further comprising:

producing a semi-finished product intended for production of a tubular product for manufacture of a fuel assembly element for one of a fuel assembly for a water-cooled nuclear reactor and a fuel assembly element for a CANDU reactor.

20. (New) The method according to claim 11 further comprising:

producing a bar intended for production of a small diameter plug bar for manufacture of plugs closing ends of jacket tubes of fuel assembly rods for nuclear reactors.